University of Rochester
School of Nursing

NSG 315: Microbiology Lab for the Health Sciences

Pre-Requisite(s)
Prior or concurrent didactic microbiology course is recommended.

Co-Requisite(s)
Prior or concurrent didactic microbiology course is recommended.

Credit Hours
Lab hrs: 1 credit = 2 clock hrs/week (28 hrs/semester)

Course Format
Complete Online Course

Meeting Days, Times, and Locations
Fully online. No required in-class sessions. See course outline for anticipated time of completion. Students should plan on a minimum of four weeks to complete this course.

Course Description
This course is designed as a stand-alone lab that can be taken concurrently with any microbiology course such as Microbiology and Application to Health (NSG 309). Learners will study microscopic organisms that range from observing eukaryotic and prokaryotic cell structure to understanding microbial genetics. This distance learning lab provides learners with the knowledge and skills necessary to conduct laboratory experiments, observe and analyze results, and complete laboratory reports in the home setting.

Student Learning Outcomes
At the conclusion of this course, the student will achieve the following identified outcomes:
1. Describe various types of microorganisms
2. Conduct lab experiments using proper technique
3. Quantify the number of microorganisms in a given sample
4. Explain the techniques used to control microbial growth
5. Analyze how different types of media can be used to grow specific microorganisms
6. Examine how various nutrient sources and ecological factors impact microbial growth

Teaching Methods/Activities
This course uses a combination of methods to facilitate learning and mastery of content, including:
- Safety guidelines
- Virtual presentations
- Instructional videos
- Case studies
- Recommended websites
- Practice questions
- Digital Lab Manual
- Hands-on experiments conducted in the student's home setting
- Observation and analysis of laboratory results
- Laboratory reports
- Customer support and service

Evaluation Methods/Learning Outcomes

Course Requirement	Percent of Total Grade	Alignment with Student Learning Outcome(s)

1. Completion of Laboratory Experiments	40%	SLO 1-6
2. Laboratory Reports	40%	SLO 1-6
3. Practice Quizzes	20%	SLO 1, 3, 4, 5, 6

The final grade entered is based on School of Nursing grading system. See *Student Handbook* (https://www.son.rochester.edu/assets/pdf/studenthandbook.pdf)

Grading System

The student's final numerical grade will be converted to a letter grade based on the following University of Rochester undergraduate student grading criteria:

A	93-100	**C**	73-76	
A-	90-92	**C-**	70-72	"C-" is considered unsatisfactory work for undergraduate students; see *Student Handbook* for implications.
B+	87-89	**D+**	67-69	
B	83-86	**D**	63-66	
B-	80-82	**D-**	60-62	
C+	77-79	**E**	<60	Failing grade; see *Student Handbook* for implications.

For both UG and graduate programs: Grades will be rounded up so that 0.5 (and above) rounds to the next whole number (e.g., a grade of 72.5 will round up to a 73; rounding is only to the tenths; for example, 72.47 does not round up to a 72.5).

Required Textbook(s)

eScience Labs, Microbiology 2nd Edition Lab Kit

Required Equipment:

Students will be required to take photographs and/or videos of each lab set-up and upload them to Blackboard. Additional household materials (e.g., bleach, food, measuring cups/spoons) to use throughout the experiments as outlined on the eScience Labs website.

Course Outline

Lab Topic	Lab #	Approximate Time to Complete
Introduction to Science	1	2 hours
Microbiology Lab Safety	2	Preparation: 30 minutes Observation and Analysis: 2-3 days
Introduction to the Microscope	3	1 hour
Introduction to Culturing and Aseptic Technique	4	Preparation: 60 minutes Observation and Analysis: 6 days
Structure and Microscopy	5	Preparation: 90 minutes Observation and Analysis: 3 days
Growth of Microorganisms	6	Preparation: 60-90 minutes Observation and analysis: 4-6 days
Quantitation of Cultured Microorganisms	7	Preparation: 60-90 minutes Observation and Analysis: 2-3 days
Selective Media and Agar	8	Preparation: 3-4 hours Observation and Analysis: 1-2 weeks
Differential and Biochemical Tests	9	Preparation: 5 hours Observation and Analysis: 4-6 days
Eukaryotic Microbes, Parasitology, and Viruses	10	Preparation: 2 hours Observation and Analysis: 2 weeks
Food Microbiology	11	Preparation: 60-90 minutes Observation and Analysis: 28 hours
Microbial Genetics and Genetic Engineering	13	30 minutes

ADA Statement and Holidays
See *Student Handbook* (https://www.son.rochester.edu/assets/pdf/studenthandbook.pdf)

Academic Honesty Statement
Students are responsible for their own work. Students are expected to have read and to practice principles of academic honesty. See *Student Handbook* (https://www.son.rochester.edu/assets/pdf/studenthandbook.pdf) Student attestation is completed on Blackboard for each course.

Professional Behavior/Civility Statement
The University of Rochester, School of Nursing (SON) seeks to provide an environment for learning and teaching that is respectful of diverse persons and points of view in all classroom, electronic, and clinical settings. Consistent with this goal, it is expected that diverse perspectives and opinions will be expressed and received in a respectful and professional manner. Incivility, intolerance, hate speech, and abusive behaviors are considered professional misconduct and will be acted upon in accordance with the statement in the *Student Handbook*. (https://www.son.rochester.edu/assets/pdf/studenthandbook.pdf)

Sexual Harassment Policy
Students are to abide by the University of Rochester Student Sexual Misconduct Policy which can be found in the *Student Handbook* (https://www.son.rochester.edu/assets/pdf/studenthandbook.pdf). Faculty review policy in all face-to-face classes.

HIPAA Compliance
Students are to abide by the University of Rochester HIPAA Compliance Guidelines which can be found on the SON website (http://son.rochester.edu/r/HIPAA-Video).